Dr. Yuan is a professor in the Department of Computer Science at NCA&T. She is an associate director of Center for Cyber Defense, a CAE-CDE (Center of Academic Excellence in Cyber Defense Education) and CAE-R (Center of Academic Excellence in Research). She was previously the director of Center for Cyber Defense (2010-2020) and led the redesignation of the CAE-CD in 2014, and the designation of CAE-R in 2019. She was the interim chair and chair of the Computer Science Department from 2017 to 2021. Her research interests include AI and machine learning, anomaly detection, software security, cyber identity, and cyber security education. Her research has been funded by the National Security Agency, the National Centers of Academic Excellence in Cybersecurity (NCAE-C), the National Science Foundation, the Department of Energy, the Department of Education, etc. She has served on the editorial board for several journals including Computers and Security.

Title: A Study of Gender Bias in Face Presentation Attack and Its Mitigation

Abstract:
In biometric systems, the process of identifying or verifying people using facial data must be highly accurate to ensure a high level of security and credibility. Many researchers investigated the fairness of face recognition systems and reported demographic bias. However, there was not much study on face presentation attack detection technology (PAD) in terms of bias. This research
sheds light on bias in face spoofing detection by implementing two phases. First, two CNN (convolutional neural network)-based presentation attack detection models, ResNet50 and VGG16 were used to evaluate the fairness of detecting imposter attacks on the basis of gender. In addition, different sizes of Spoof in the Wild (SiW) testing and training data were used in the first phase to study the effect of gender distribution on the models’ performance. Second, the debiasing variational autoencoder (DB-VAE) was applied in combination with VGG16 to assess its ability to mitigate bias in presentation attack detection. Our experiments exposed minor gender bias in CNN-based presentation attack detection methods. In addition, it was shown that imbalance in training and testing data does not necessarily lead to gender bias in the model’s performance. Results showed that the DB-VAE approach helped in mitigating bias in detecting spoof faces.

Alex Tropsha, Ph.D., is an expert in the fields of computational chemistry, cheminformatics and structural bioinformatics who works to develop new methodologies and software tools for computer-assisted drug design. He is creating new approaches to protein 3D structure analysis and prediction based on the principles of statistical geometry. His particular expertise lies in the field of cheminformatics, a discipline where information and informatics methodologies are applied to storing, managing, exploring and exploiting chemical databases. In
layman’s terms, cheminformatics combines chemistry and computer science to aid in the discovery of new drugs.

Tropsha has authored more than 190 peer-reviewed papers and 20 books and book chapters. He joined the school’s faculty in 1991 as an assistant professor and director of the Laboratory for Molecular Modeling. He was promoted to associate professor in 1997 and to full professor in 2004 and holds appointments as an adjunct professor in the UNC Department of Biomedical Engineering and in the Department of Computer Science and is a member of the UNC Lineberger Comprehensive Cancer Center. He was named as the K. H. Lee Distinguished Professor in 2008.

Debzani Deb (BS’96 SUST, Bangladesh; MS’01 University of Adelaide, Australia; PhD’08 Montana State University, Bozeman) is a Professor of Computer Science at the Winston-Salem State University. She is also the founding director of Center for Applied Data Science (CADS) at WSSU. Previously she also worked as an assistant professor at Indiana University of Pennsylvania, PA and as a visiting faculty at University of North Carolina at Greensboro, NC. She authored and coauthored over 40 referred journal and proceeding articles and has been awarded nearly $3 millions of federal funding as PI and Co-PI. She has over 15 years of experience in Higher Education as faculty member in three different countries such as USA, Australia, and Bangladesh. Dr. Deb is a regular reviewer for journals including Journal of Parallel and Distributed Computing (JPDC), conferences including ACM Technical Symposium on Computer Science Education
Abstract:

Acute neurological complications are some of the leading causes of death and disability in the U.S. The medical professionals that treat patients in this setting are tasked with deciding where (e.g., home or facility), how, and when to discharge these patients. Therefore, it is crucial to predict potential patient discharge outcomes as early as possible during the patient’s hospital stay and to know what factors influence the development of discharge planning. This presentation will detail the development and assessment of early predictive models that showed promising results in predicting patient discharge outcomes based on their early admission data. Furthermore, the accuracy and interpretability of the predictive models suggest that the models can be used in a suggestive context to help guide healthcare providers in planning effective and equitable discharge recommendations.